

SCIENCE & GOVERNMENT REPORT

25th Year of Publication

The Independent Bulletin of Science Policy

Volume XXV, No. 1

P. O. Box 6226A, Washington, D. C. 20015

© January 15, 1995

Q&A: Grant Swinger on Science in the Gingrich Spirit

Following is the latest in an occasional series of exclusive interviews with SGR's consultant on science-policy affairs, Dr. Grant Swinger, Director of the Center for the Absorption of Federal Funds. Swinger spoke with SGR Editor Greenberg on January 10.

SGR. Looks pretty grim, with those hardnosed Republicans taking over in Congress.

Swinger. Let others wail and worry. We see opportunities. The Center has thrived on the principle that nothing is forever, or even for very long, in federal research policy.

SGR. Well, there was the Super Collider and a few space projects.

Swinger. The list of ups and downs in federal research goes back decades: solar energy, nuclear power, poverty, population control, the scientist shortage, the scientist surplus, desalination, urban violence, technology transfer, education research, manned space exploration, strategic research, pollution, the green revolution, non-lethal weapons. Careers and even whole institutions have risen and crashed

New House Science Committee Holds First Policy Hearing—P. 3

with the comings and goings of these programs. Today, we've got Clinton's clean-green car. Do you think that's going to last? Don't bet on it. But we're always here and ready to go.

SGR. What's hot in this new political atmosphere?

Swinger. The application of the piecework principle to research, including basic research. We're under contract to develop the concept.

SGR. Piecework?

Swinger. They do it in the garment industry and in fruit picking. Why not in research?

SGR. How would piecework be applicable to research?

Swinger. For the scientist, it comes down to pay per publication, with a few twists. What we're proposing to the federal agencies is a real revolution in grant policy. Reinventing government like you never believed possible. Under our plan, they'd give a starting scientist a living wage and a research budget for, let's say, five years. After that, if the output is satisfactory, the research budget continues, but income is directly based on publication, plus an extra goody—payment based on frequency of citation. No pay just for showing up, rushing around to conferences, and bravely holding up under the cruel stress.

SGR. I doubt that many scientists—

Swinger. Let me finish. A productive scientist now averages about three or four papers a year and earns an average of \$60,000. So, the granting agency would shell out \$15,000 per paper per author, plus a sweetener of \$1,000 apiece for each time the paper is cited in someone else's paper—the accepted indicator of scientific importance.

SGR. Wouldn't the system encourage backscratching. You know, you cite me and I'll cite you.

Swinger. Sure. But it would also give the agencies an incentive to hold down honorary authorship and repetitive publication. Right now the agencies say they're concerned, but they really don't give a damn about who muscles his name onto a paper or how many times the same trash gets published. When they have to pay for it, they'll give it

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In Brief

Fighting for survival since the Senate Republican Conference recommended its abolition last month, the Office of Technology Assessment (OTA) finds it has many friends out there. Congressional leaders have been hearing from academics and businessmen who say they value OTA's studies. OTA's worried staff got pep talks last week from OTA Congressional Board members Senator Edward Kennedy and Rep. Amo Houghton, a New York Republican. The optimists expect that OTA will survive, but with a reduced budget and orders to shed its scholarly pace and get more in sync with the legislative calendar.

The big problem for all agencies and programs now fleeing the budget ax is that the Republican chiefs must shed budget blood, and lots of it, to retain their credibility as anti-government crusaders. Coming up soon will be a big rescission bill to take back money appropriated for the current fiscal year, which runs to next September 30. With the White House finishing up the budget it will submit to Congress early next month, there's intense competition to demonstrate who can be stingier.

The big report on the Gallo case prepared by John Dingell's staffers failed to emerge before the election returns deposed the Michigan Democrat from the Chairmanship of the House Energy and Commerce Committee. But the report, mainly the work of Suzanne Hadley, on loan to Dingell from NIH, will soon be "unofficially" available, electronically and in paper, and in two versions—the full 300 pages and a 70-page summary (SGR will tell how to get them). The report accuses Gallo of numerous ethical transgressions and says NIH and the misconduct guardians failed in their responsibilities.

...A Gingrich Building for the NIH Bethesda Campus?

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attention. Piecework will starve out the idlers—the welfare queens of science—and reward the producers. For a pilot project, we'd start with postdocs, since they're like migratory workers anyway and really are kind of used to piecework rates and seasonal layoffs.

SGR. But—

Swinger. The need for some adjustments and safeguards would become visible along the way, but the basic principle is sound: reward for performance. Believe me, with the new Congress looking on, the agencies are showing a lot of interest in this one.

SGR. Which ones?

Swinger. I can't say at the moment, but figure it out for yourself. The research agencies are responsive to anything from Capitol Hill, from whispers to shouts. Without revealing any secrets, I suggest that you recall how NSF scrambled to develop a plan for "strategic research" after an assistant to a Senator demanded it in an unintelligible passage in an appropriations report. First problem in that case was to figure out what the Senator meant by strategic research, since she obviously hadn't a clue and the assistant wasn't talking.

SGR. I see.

Swinger. Ten years ago, Newt Gingrich wrote that the space station is a good thing because it can provide a no-gravity work environment for handicapped people. Believe me, there are people deep inside the federal bureaucracy who have been assigned to explore this clue. But enough of that. I'd also like to point out that in our role as consultants, we've proposed piecework for other sectors of the economy.

SGR. Such as?

Swinger. Take baseball, with its long strike over pay. Under piecework, a player would get \$100,000 per home run, which would work out to \$4 million year, which is about right for a top hitter. Pitchers would be paid per strike, and fielders per catch. In football, pay would be based on yards gained, tackles, blocks, successful passes, and so forth. There would be money penalties, too, like for fumbles and interceptions. As in other cases, experience will reveal the need for refinements, but the principle is sound. Piecework pay will liven up sports, just as it will make the laboratories hum. Look for new golden ages in science and sports.

SGR. Discuss some of the changes that are taking place in your relations with federal research agencies.

Swinger. In our capacity as advisors to the National Institutes of Health, we have recommended a strategic name change at one of the institutes to harmonize with the times. We would take the present National Institute of Child Health and Human Development and rechristen it as the National Institute of Child Health and Human Development and Orphanage Management. It's a small change, but one that says a great deal. And with just three words. Also, it's interdisciplinary, and that counts for a lot. Congress likes things that are interdisciplinary. What it adds up to is a nice

example of reinventing government.

SGR. That should appeal to the White House and to the new Congress.

Swinger. That's right. We're also thinking about taking one of the old buildings on the NIH Bethesda campus and naming it the Gingrich Building. They've got buildings there named after lots of other Congressmen—Hill, Fogarty, Natcher, Magnuson. But they usually got honored late in their careers, long after they delivered for NIH. The approach we're recommending calls for foresight. Catch 'em young, we say. But one thing at a time. Right now we're working on the name change for the Child Health Institute.

SGR. Has NIH acted on your proposal?

Swinger. Not in the sense that it has decided for or against. That's not to be expected in the two months since we made the suggestion. But in the NIH manner, it has announced plans to award a contract to the Institute of Medicine for a workshop to discuss the suggestion. If the outcome is favorable, then a task force will take over and prepare an agenda for a conference, and if the idea is endorsed, it will be forwarded to the Advisory Committee of the Director of NIH for consideration. The Committee will make a recommendation. If the recommendation is favorable, and is accepted by the Director, it will be forwarded to the Office of the Secretary for a final decision.

SGR. Do you expect a decision sometime soon?

Swinger. I can't say. But it should be noted that some proposals that were made two Directors ago at NIH are still working their way through the system. The people in Bethesda are comfortable with deliberation. I heard a story about a committee there that for years met every three months and produced a report for an office that had been abolished five years earlier. And no one realized it until there was a conflict over use of the committee room. It was sort of a biomedical version of the Lost Battalion. But these things can happen. Incidentally, that committee episode is so poignant—members carrying on with their responsibilities no matter what—that we're thinking maybe of commemorating it through our little arts program at the Center. Maybe commission a painting of a dozen people around a table.

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Published by Science & Government Report, Inc., twice monthly, except once each in January, July, August, and September. Annual subscriptions: Institutions, \$455.00 (two years, \$780.00). Bulk and individual rates upon request. Editorial offices at 3736 Kanawha St. NW, Washington, DC 20015. Tel. (202) 244-4135. For subscription service: PO Box 6226A, Washington, DC 20015. Tel. 1-800-522-1970; in Washington, DC 785-5054. Reproduction without permission is prohibited. SGR is available on University Microfilms International. Claims for missing back issues will be filled without charge if made within six weeks of publication date. ISSN 0048-9581.

Lots of Kind Words for Science at First House Hearing

In the first hearing on science policy in the newly installed Republican Congress, the House Science Committee chatted amiably last week with senior research officials of the Clinton Administration.

There were no shouts, only a few warnings of doom, and only one combative thrust—from John Gibbons, Clinton's Science and Technology Advisor—who warned of a fight if Republicans try to cut R&D too deeply. Otherwise, the Science Committee hearing was pretty tame, bearing none of the lynch-party characteristics amply evident on other parts of Capitol Hill these days.

Perhaps most notable in the new anti-government era was the strong interest members of the committee expressed in an ancient Congressional rite—keeping the money flowing to federal labs in their districts.

During the hearing, which drew an overflow crowd of sci/tech lobbyists and onlookers, it was frequently observed that science and technology might be battered in the anti-spending campaign that helped elect the new majority in Congress. However, the sin of wicked federal overindulgence at the taxpayers' expense was not attached to science. Under the temperate chairmanship of Rep. Robert Walker, of Pennsylvania, the proceedings resembled old home week for the capital's science crowd rather than a prelude to fiscal doom.

The proceedings weren't linked to any legislative proposal. And it's important to note that the Science Committee, successor to what used to be the Science, Space, and Technology Committee, has no direct control over money. It's a law-writing and oversight committee, with a jurisdiction confined to NSF, NASA, Department of Commerce technical agencies, EPA and DOE research, plus a few minor agencies. Health and defense research are lodged elsewhere, which means the Science Committee surveys a thin slice of federal R&D, perhaps 15-20 percent.

However, the new Republican managers inherit a solid tradition of the committee as a promoter of science and technology and the principal site for science-policy exposu-

lating on Capitol Hill, even if the talk comes to naught. On that basis alone, the hearing brought out the science-policy community. But interest was also aroused by the existence of a long, friendly relationship between Chairman Walker and House Speaker Newt Gingrich, though what that means for science affairs is not clear. In any case, talk, a lot of it in the form of rambling commentary, was the business of the hearing, held January 6.

Hard times were acknowledged by all as an inescapable political reality of the times. But Walker, at last in the limelight after 18 years of minority membership on the committee, chose a statesmanlike role for his debut, titling the hearing "Is Today's Science Policy Preparing Us for the Future?" The designated horizon was the year 2015, with Walker cautioning federal policymakers against "worrying about the current fiscal year without considering the effects of today's decisions on the future."

Elsewhere on Capitol Hill, the chairman's partymates continued to emit war whoops against federal spending. But in the traditional hearing room of the House Science Committee, under Republican control for the first time since its founding in 1959, the talk was more about ensuring the progress of science and technology, rather than how to reduce spending.

Hazel O'Leary, the head of DOE, was the only major agency head in the Committee's jurisdiction who did not attend. With the hearing format calling for a succession of brief talks by federal officials, followed by questioning, the first witness was Commerce Secretary Ron Brown. He presides over the most imperiled research program in the federal portfolio, if Republican campaign rhetoric is to be taken at face value: the Advanced Technology Program (ATP) at the National Institute of Standards and Technology. A Clinton favorite, ATP has soared from \$50 million in 1992 to \$430 million this year.

Operating as a marriage broker and partial financier for
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Swinger Q&A

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Something like that.

SGR. The Center is certainly engaged in a broad array of matters.

Swinger. The recent political changes have stirred things up a good deal, and I've given you just a smattering of our programs.

SGR. What else can you tell me about?

Swinger. We are working on the application of market principles to organ transplants. The present system of altruism will get us no further than we've come so far. It makes everyone equal, rich and poor, which looks good, but in fact is distinctly un-American. Everyone would like to go to expensive restaurants, but they're available only to people who can pay. That's rationing. Same thing should apply to

hearts, livers, and kidneys. And there's a good public health rationale for approaching it this way.

SGR. Tell me.

Swinger. If the poor can expect a replacement organ at public expense, they'll figure, what the hell, and smoke and drink, in blatant disregard of sound principles of personal responsibility for health. The present methods provide an incentive for bad health practices by the poor. Their health needs are going to break the bank, if we don't adopt drastic measures.

SGR. Well, there's no doubt that you've got a full plate here at the Center.

Swinger. There's lots more, but I'm off to Moscow. Seems they've heard about us, and would like a little guidance on establishing a Center for Absorption just like ours.

SGR. Thank you, Dr. Swinger.

Worried Words About Future of Basic Science

The Science Committee member who emerged as the unequivocal champion of basic research was Rep. Vern J. Ehlers (R-Michigan), a second-term member who holds a PhD in physics from UC Berkeley. Though the hearing was supposed to focus on science-policy steps today that would pay off in the year 2015, Ehlers said, the discussion indicated "more concern about the short term than the long term," and little attention to protecting basic research, particularly at NSF.

Noting a Senate directive in the last Congress for NSF to devote at least 60 percent of its budget to "strategic research," Ehlers said he feared that changes were being made at the expense of basic research. "I think that is a dangerous trend, and I am worried about an Appropriations Committee which by virtue of its report and the money it allocates is setting science policy"—a reference to the Senate Appropriations Subcommittee for NSF, chaired by Barbara Mikulski (D-Md.) in the last Congress.

Ehlers capped his remarks by observing to Chairman Walker that "what you are trying to get at with this hearing is to establish a coherent Congressional science policy as it relates to basic research, and I commend you for that because we desperately have to do that within this committee and its Senate counterpart and not simply let it be established through the appropriations process."

In response, Presidential Advisor John Gibbons asked, "With our kind of society and our kind of economy, what is the appropriate amount for us to be investing in basic research and in other areas of science and technology? I don't think the answer is here yet," he said, noting that the Clinton Administration had "posited a 3 percent number, as drawn from other national economies. We are not sure that is the right number," he admitted. But the Administration is dedicated to basic research, Gibbons insisted, "even to the point of taking money away from other activities."

Ehlers then turned to NSF's Neal Lane, saying that the "Foundation has always been the traditional bastion of basic research, and I would like your response to the directives you are getting from Congress to broaden that into applied areas."

Referring to the Mikulski directive for strategic research, Lane said, "As I began to understand what the message was there, my conclusion was that the emphasis at NSF was expected to continue to be on basic research, the very highest quality basic research, but that there is basic research that can be identified as important to so-called strategic areas, and we were asked to pay attention to those. So, our commitment is to continue to fund the most outstanding basic science across the board at the frontiers of knowledge, and in many cases that will be science that applies to one or another larger issue."

Science Committee

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industrial collaborations, ATP represents the "industrial policy" abhorred by conservative Republicans, and during last fall's election campaign was listed for a total wipeout in an annex to the House Republicans' Contract With America.

Brown, a smooth performer in the witness chair, minimized the scale of direct federal help for industrial technology, contending that, including ATP, it is a mere 2 percent of Washington's \$70-billion-a-year R&D spending, and that it fills a gap that was long-ago tended to by our industrially advanced foreign competitors.

"Our ATP program addresses the shortfall," Brown said, adding that small business—a Congressional favorite—fares well in the stiff competition for ATP funds, and that business, big and little, supports the program. He delivered a similar defense for another Republican grievance, NIST's Manufacturing Extension Partnership, a network of technical advisory centers modeled after the Agricultural Extension Service.

Next up was NASA Administrator Daniel S. Goldin, who said NASA has suffered enough cuts in recent years, and must be spared further reductions, since NASA, he proclaimed, is producing wonders faster, better, and cheaper, despite a fiscal bloodletting.

Carol Browner, head of EPA, invited the committee members to "imagine what our country would be like today, the health problems our children would face today, if we had not taken all of the steps we have taken in the last 25 years to protect the health of the public, to protect the health of our environment." She reminded her listeners of pollution-fed fires 25 years ago on the Cuyahoga River, in Ohio.

Browner brought up the politically sensitive issue of the Contract With America's passage on risk assessment, which would require federal agencies to dip into their research budgets to provide scientific backing for regulatory directives. A bad idea, she said, warning that the requirement "could freeze scientific progress and unnecessarily delay actions necessary to protect the health of our children and neighborhoods."

Next to testify was Neal Lane, Director of the National Science Foundation, which has pretty well bullet-proofed itself against political snipers by composing a "strategic plan" that says, whatever you want, NSF is already doing it. The goals of the plan, he explained, provide for "world leadership, knowledge and service to society, and excellence in education at all levels."

Lane added, "Taxpayer-funded research focusing on answers to fundamental questions that defy our ability to predict outcomes, of which NSF is the primary overall supporter, is

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... Gibbons Warns Against Cutting R&D Support

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not mutually exclusive of research that has a conscious relationship to the nation's priorities and societal needs."

The cleanup witness was Presidential Advisor Gibbons, Director of the White House Office of Science and Technology Policy. Alone among the witnesses, Gibbons directly confronted the Republican vows of cuts in research programs in fulfillment of promised spending reductions. Science has been on short budgets for a long time, he said, and further cuts would be dangerous.

Referring explicitly to the Contract With America, Gibbons warned that "as we move toward the end of this century, this nation might find itself in a wholesale, even devastating, retreat from the investments on which our future depends, investments in science and technology."

And introducing the only combative note in the hearing, Gibbons declared: "So, we will stand and fight with you in resisting such a retreat because it cuts to the core of our guiding premise that government must invest in our children's future in ways that promise the highest payoff."

In the question period which followed, with a loosely enforced five-minute limit, nothing was said about Gibbons' challenging remark.

Rep. George Brown (D-Calif.), who chaired the committee when the Democrats controlled the House, said he was worried by funding cuts and a poor job market for scientists.

Gibbons said he was concerned, too, noting that budgets have been static for two years. The job market in R&D is sluggish, he said, but other sectors are worse off.

Rep. Dave Weldon, a freshman Republican from Florida expressed dismay about morale at the Kennedy Space Center, which is in his district. Workers there, he said, are burdened by demands to find ways to hold down costs, and are also fearful about losing their jobs. Everyone is under pressure, NASA chief Goldin replied, but he hoped that the cost-cutting studies would bear fruit and lead to stability.

Elimination of the Space Station to loosen up money for space science was recommended to Goldin by Rep. Tim Roemer (D-Indiana). Goldin responded that NASA would thrive by cutting elsewhere. "We do not need thousands of people in NASA-Houston operating spacecraft. We do not need a thousand people or 500 people out at JPL [Jet Propulsion Laboratory] watching a spacecraft as it goes between earth and the planet Saturn," Goldin declared, adding: "We at NASA are committed to revolutionary change."

Space science, Goldin told the committee, is now doing better at NASA. "We started more scientific missions in the last few years than we did in the prior five." But they're less expensive missions, he said, explaining, "I don't propose starting a new Apollo program."

Roemer asked NSF Director Lane to describe how the Foundation is getting by under fiscal stringency. Praising the importance of excellence and priorities, Lane said NSF was

striving to fulfill its responsibilities to science, industry, and education, and that he was confident it would succeed.

The Advanced Technology Program was brought up by Rep. Alcee Hastings (D-Fla.), who wondered whether government wasn't undertaking a job that belonged to industry, an echo of Reagan-era denunciations of "industrial policy." The Commerce Secretary rejected the charge, claiming that the Bush Administration was a big backer of ATP, though, in reality, it wasn't, and went on to assert: "The fact is it has nothing to do with industrial policy, it has nothing to do with picking winners and losers. It has most to do with keeping us on the cutting edge as far as technological innovation is concerned."

Hastings thanked Brown and asked the Secretary to send a staff member to his Congressional office to provide more information about ATP and other NIST programs.

Next was Rep. Sherwood Boehlert (R-NY), who was a seeming sureshot for a subcommittee chairmanship on the Science Committee but opted for a subcommittee chairmanship on what's now called the Transportation and Infrastructure Committee (no more Public Works). Still a Science Committee member, Boehlert retains his interest in science policy, and was riding a favorite theme—teaching versus research, with the former losing out in higher education, in his view.

Agreeing that the matter needs attention, Lane said that in his academic travels, "the message I try to carry is the one about breaking down all these artificial barriers, the barriers between research and education on a campus."

Boehlert pressed on. "We need to push the universities," he said. Though the "catalogs announce all the stars that are available on campus," the Congressman said, students are deprived if "they are spending all their time in the lab and no time in the classroom."

Warmth for NIST, its programs and budgets, was evident in the words of Rep. Constance Morella, who chairs the Science Subcommittee on Technology—and represents the district in which the main NIST facilities are located. Addressing the Commerce Secretary, Morella said that she wanted him to know that she planned to invite all members of the Science Committee to visit NIST "to see what happens there in terms of how important it is to our technological development and competitiveness."

Freshman Todd Tiahrt (R-Kansas) asked Gibbons about the collapse of the Super Collider and the status of high-energy physics. Gibbons recited past explanations about events outrunning the Cold War beginnings of the project, cost excesses, failure to include hoped-for international partners in the early planning, etc.

Then, noting that the upgraded Fermi injector and a new project at Stanford assured "that we will be in the forefront for another decade," Gibbons said that the US was "attempting to become a part of the large international consortium on

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NAS Policy Study Told It Can't Prescribe More Money

Yet another study of government support for R&D got underway last week at the National Academy of Sciences. But this one, by the Committee on Criteria for Federal Support of R&D, is supposed to be different.

It's been told by its financier, the US Congress, that the "study should not conclude that the answer to the problem is just to increase funding for federal research and development. The study," says the legislative directive, "must focus on shifting the balance within existing levels of funding."

Out of concern over sluggish budgets for biomedical research, the study was initiated in the last Congress by Senator Tom Harkin (D-Iowa) when he chaired the Appropriations Subcommittee for the National Institutes of Health. With a mandate to cover all sectors of federal R&D, it is assured of continuing political interest because of the elevation of his biomedical-comrade-in-arms, Senator Mark Hatfield (R-Oregon), to the chairmanship of the full Appropriations Committee.

With former Academy President Frank Press as chairman, the committee conducting the study held a two-day inaugural meeting last week, and charted plans for holding six sessions by next October in preparation for completing its report by the prescribed February 1996 delivery date.

Science Hearing (Continued from Page 5)

the Large Hadron Collider" which Europe plans to build at CERN, near Geneva. "In other words," Gibbons said, "we feel that in very large, highly expensive endeavors, that these are inherently international in flavor, and that we should move in that direction, and that is what we are doing."

Asked about the costs and progress of the Space Station, Goldin replied: "We have to stop asking for changes and redesigns. If there is one more request for redesign, I will recommend the cancellation of the Space Station."

As the hearing proceeded, it produced additional signs of zest for delivering federal dollars to the folks back home, even on the part of a self-described "fiscal conservative," Rep. Van Hilleary, a freshman Tennessee Republican. Hilleary related that he "went to these folks at the Arnold Engineering Development Center [in his district], and said, 'I want to support this, but you have to convince me that this is economically sound, and that this would create jobs and enhance revenues to the federal government and not be a budget buster.' And they convinced me of it. I will try hard to convince folks here of it," he said, referring to his Congressional colleagues.

Near the end of the hearing, the Chairman cautiously expressed agreement with Rep. Vern J. Ehler's (R-Mich.) criticisms of NSF, observing that "if government peels too much away doing the applied kinds of research or the directed basic research, then what we lose is the ability to develop the knowledge that may be the basis for something we cannot even think about in the year 2015 at the present time. I am concerned about that," Walker said.—DSG

Along with the order to avoid a call for more money, the committee was also directed, in a memo from the Senate committee staff, to address several sensitive questions: "Do the present allocations in federally supported research reflect and respond to ... new national and economic security needs?" and "Should a process be established to measure the quality of federally funded science (for both its extramural and intramural programs)?"

Members of the committee: Lew Allen Jr., Chairman, Charles Stark Draper Laboratory, Inc.; David H. Auston, Provost, Rice University; Forest Baskett, Senior VP, Silicon Graphics Computer Systems; Barry R. Bloom, Professor of Microbiology and Immunology, Albert Einstein College of Medicine; Daniel J. Evans, Chairman, Daniel J. Evans & Associates; Baruch Fischhoff, Professor of Social and Decision Sciences, Carnegie Mellon University; Marye Anne Fox, VP for Research, University of Texas; Shirley A. Jackson, Professor of Physics, Rutgers University; Robert I. Levy, President, Wyeth-Ayerst Research; Richard J. Mahoney, CEO, Monsanto; Steven L. McKnight, Research Director, Tularik, Inc.; Marcia K. McNutt, Associate Professor of Geophysics, MIT; Paul M. Romer, Professor of Economics, UC Berkeley; Luis Sequeira, Professor of Plant Pathology, University of Wisconsin; Harold T. Shapiro, President, Princeton University; H. Guyford Stever, former Presidential Science Advisor; John P. White, Director, Center of Business and Government, Kennedy School of Government, Harvard. Norman Metzger is Study Director.

Job Changes & Appointments

Peter House, longtime chief of policy analysis at the National Science Foundation, has been detailed to the Smithsonian Institution for a year in accompaniment to a reorganization that abolished NSF's Office of Planning and Assessment, where he held the title of Deputy Director. House, author of 15 books on technology policy and management, moved in December to the Smithsonian Office of Information Resource Management, where he is working on systems for making Smithsonian materials electronically available to the public.

Samuel Broder, Director of the National Cancer Institute since 1989, plans to leave that post in April to join IVAX, a Florida pharmaceutical firm, as Chief Scientific Officer. Broder was recently on the Congressional hotseat because of findings of administrative sloppiness and fraudulent record keeping by NCI contractors in clinical breast cancer trials. He's also been reported at odds with NIH Director Varmus, but says his departure was propelled by the declining stature of federal service.

Pat Garfinkel, a speechwriter for 18 years for what's now called the House Science Committee, has moved to the National Science Foundation to ghost for Director Neal Lane.

Donald A.B. Lundberg plans to step down as head of the National Coordination Office for the federal High Performance Computing and Communications program, a key policy junction on the information superhighway. Lundberg has held the post since 1992 while serving as Director of the National Library of Medicine.

In Print

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From the US Department of Commerce, Bureau of Economic Analysis:

A Satellite Account for Research and Development, an article in the November 1994 issue of the Bureau's monthly journal *Survey of Current Business* (\$9 per issue, \$34 per year), adopting a new view of R&D, placing it in the category of investment, rather than consumption, which is the way it has previously been treated in annual calculations of the gross domestic product. Viewed as investment, the article states, the national stock of R&D capital stood at about \$1 trillion in 1992 (in 1987 dollars), and is growing faster than the stock of tangible wealth, which includes buildings, transportation infrastructure, etc. The authors are Carol S. Carlson, Director of the Bureau of Economic Analysis, and Bureau members Bruce T. Grimm and Carol E. Moylan.

Order the *Survey of Current Business* from: New Orders, Superintendent of Documents, PO Box 371954, Pittsburgh, Pa. 15250-7954; tel. 202/512-1800; fax 202/512-2250.

From the National Academy of Sciences:

Meeting the Nation's Needs for Biomedical and Behavioral Scientists: Summary of 1993 Public Hearing (96 pp., a limited supply available without charge), second of three publications based on Congressionally mandated studies to set the levels for National Research Service Awards (NRSA) financed by NIH. The report presents statements from graduate deans, foundation officials, students, etc., made at a public hearing in May 1993, on stability in research funding, stipends in NRSA awards, assessments of supply and demand, and attracting young recruits to research careers.

Order from: National Academy of Sciences, Committee on National Needs for Biomedical and Behavioral Research Personnel, Studies and Surveys Unit, Room PJ-2004D, 2101 Constitution Ave. NW, Washington, DC 20418; tel. 202/334-3339; fax 202/334-2753.

Meeting the Nation's Needs for Biomedical and Behavioral Scientists (162 pp., \$27, plus \$4.50 for shipping), published last fall, was the first in the series of three on health-research personnel. It was notable for expressing doubts about the validity of standard techniques for forecasting personnel needs.

Scheduled for publication in June: *Report of the Panel on Estimation Procedures*, final in the current series of three on NRSA forecasting, and the most eagerly awaited, since it is expected to flesh out the earlier expression of doubts about forecasting techniques.

Order from: National Academy Press, Box 285, 2101 Constitution Ave. NW, Washington, DC 20418; tel. 1-800/624-6242; in the Washington, DC, area: 202/334-3313.

From the Dana Alliance for Brain Initiatives:

The Brain in the News (twice monthly, no charge), news clippings about brain disease and research, mostly from US publications, some from abroad, distributed since last Au-

gust to about 1000 journalists and public officials as part of a public-relations campaign to promote brain research. The Alliance, formed three years ago by brain researchers, is an offshoot of the Charles A. Dana Foundation, of New York. The steady distribution of press clippings is something new in the busy field of health lobbying.

Order from: Dana Alliance for Brain Initiatives, 1001 G St. NW, Suite 1025, attn. Randy Talley, Washington, DC 20001; tel. 202/737-9200; fax 202/737-9204.

From the Office of Inspector General, National Science Foundation:

Semiannual Report to the Congress (68 pp., no charge), the eleventh from NSF's guardian of the public purse and scientific ethics, reporting on audit results, intellectual crimes, etc. The reporting period covers April 1 to Sept. 30, 1994.

Order from: Office of Inspector General, National Science Foundation, Arlington, Va. 22230; tel. 703/306-2100; fax 703/306-2649.

From the General Accounting Office (GAO), no charge:

Electric Vehicles: Likely Consequences of US and Other Nations' Programs and Policies (GAO/PEMD-95-97; 137 pp.), reports on programs in the US, France, Germany, Italy, Japan, Sweden, Switzerland, and the UK, and concludes that the technological future is unpredictable, but warns that the US program is handicapped by limited funds and fragmentation among several federal agencies.

National Laboratories: Are Their R&D Activities Related to Commercial Product Development? (GAO/PEMD-95-2; 97 pp.), says, after looking at 10 DOE labs, that they may have a potential for helping profit-seeking companies, but only time will tell.

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From the Science Policy Research Division of the Congressional Research Service (CRS), part of the Library of Congress, all without charge:

International Science and Technology: Issues for US Policymakers (94-733 SPR, 102 pp.), a concise comparative review of politics, organizational structure, priorities, and funding for research and development in the US, Germany, Japan, India, Australia, the UK, New Zealand, and the European Union. By a wide margin, the US is the worldwide goliath of R&D, with total spending in 1993 of \$161 billion, including a federal share of \$40 billion for defense and \$27 billion for civilian work. US industry provided \$83 billion of its own for R&D, while universities were listed with expenditures of \$6 billion in internal funds. Japan was a distant second in total national R&D expenditures, reported at \$101 billion for 1991. But US and Japanese industrial firms were financially neck and neck in R&D, with spending of about \$80 billion. The big difference was in defense R&D—\$40 billion for the US, \$1.4 billion for Japan. Published about a month before the Republicans' November Congressional sweep, the report is suddenly timely because of widespread talk about revamping the federal R&D enterprise. Glenn J. McLoughlin, of the CRS staff, coordinated the report.

The DOE Multiprogram Nuclear Weapons Laboratories (94-916 SPR, 32 pp.), another pre-election production, this one provides fine details on the eternal topic of closing down one or more of the Department of Energy's three weapons labs, Lawrence Livermore, Los Alamos, and Sandia. The issue has returned to center stage because of huge cuts in DOE spending pledged by the Clinton Administration, plus the imminence of a big report on the future of DOE labs, due next month from a commission headed by Robert Galvin, former CEO of Motorola. Many hold the impression, propagated by DOE, that the labs have been subjected to financial shrinkage in recent years. But the CRS report indicates otherwise, with tables showing that funding for the three of them actually increased between fiscal years 1989 and 1994, with Los Alamos growing from \$1 billion to \$1.2 billion; Sandia, from \$1.2 billion to \$1.4 billion, and Lawrence Livermore, from \$1 billion to nearly \$1.2 billion. In all cases, defense spending at the labs declined, while increases were provided for nuclear cleanup and restoration programs. The report, by William C. Boesman, notes, "The [Clinton] Administration does not speak with one voice in regard to the DOE nuclear weapons laboratories"—a reference to conflicting statements from senior officials concerning management of the nuclear stockpile.

Foodborne Illness: What Do the Data Tell Us? (94-17 SPR, 34 pp.), summary of a CRS seminar held last July to

discuss foodborne illnesses, which reportedly cause some 9000 deaths annually, plus millions of episodes ranging from mild discomfort to serious illness. The main speakers were: Morris Potter, Assistant Director for Foodborne Disease at the Centers for Disease Control and Prevention; Thomas Steahr, Professor of Demography, College of Agriculture, University of Connecticut, and Tanya Roberts, Senior Economist, Food Safety Branch, Economic Research Service, US Department of Agriculture. Donna U. Vogt, of the CRS staff, prepared the report.

Big Science and Technology Projects: Analysis of 30 Selected US Government Projects (94-687 SPR, 40 pp.), reports the fiscal and scheduling data on 16 projects financed by the Department of Energy, 11 by NASA, and 3 by NSF, with \$100 million (in 1980 dollars) as the threshold for inclusion. William Boesman is the principal author of the report, which is an update of a memorandum prepared last July for the House Science, Space, and Technology Committee.

Order CRS reports through a House or Senate member. Senate switchboard, 202/224-3121; House, 202/225-3121. Cite the Congressional Research Service as the source, with report title and number.

From the Ballistic Missile Defense Organization:

1994 Technology Applications Report (96 pp., no charge), from the successor to the Strategic Defense Initiative, brief reports on commercialization opportunities for technologies spawned by missile-defense research.

Order from: BMDO Technology Applications Office, c/o National Technology Transfer Center, Washington Operations—Dept. P, 2121 Eisenhower Ave., Suite 400, Alexandria, Va. 22314; tel. 703/518-8800, ext. 229; fax 703/518-8986.

From the Institute of Medicine, National Academy of Sciences:

Isotopes for Medicine and the Life Sciences (\$30, plus \$4 for shipping), urges the US to look ahead to assure a reliable supply of radioactive isotopes for research and medical use, some of which are now available only from foreign sources, according to an announcement of the report, which is scheduled for publication this month. Noting a decline in isotope production by the US Department of Energy and "aggressive" marketing of isotopes by Russia and Canada, the report says supplies are satisfactory. But it also calls for establishment of a national isotope program, a national medical tracer facility, additional support for the University of Missouri's research reactor, and maintenance of stable isotope production capacity at the Oak Ridge National Laboratory. The report was prepared by the IOM Committee on Biomedical Isotopes, chaired by S. James Adelstein, Dean for Academic Programs, Harvard Medical School. Frederick J. Manning, of the IOM staff, was Study Director.

Order from: National Academy Press, Box 285, 2101 Constitution Ave. NW, Washington, DC 20418; tel. 1-800/624-6242; in the Washington, DC, area: 202/334-3313.

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